

RADIOCARBON DATABASE AND ARCHIVE FOR CALIFORNIA AND WESTERN UNITED STATES

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Origin, Scope, and Goals of Database

Over the past 60 years, numerous public agencies, private companies and researchers have invested hundreds of thousands of dollars for radiocarbon analysis of tens of thousands of samples from locations across the American West. However, the dates and related sample information has not been compiled in a comprehensive or consistent fashion, nor is there a centralized database that allows researchers to access and analyze these large and valuable datasets electronically.

I noticed this problem in the mid-1990s while trying to assemble existing radiocarbon dates to evaluate their temporal, spatial, and stratigraphic significance. To address this “date-a-gap” I began compiling radiocarbon dates generated by various studies in the San Francisco Bay region. This search led to many different sources ranging from primary documents, hard-to-find grey literature, and previously unreported dates, as well as a plenty of dead-ends. Initially, the database was used and maintained for project-specific research, with new dates being added in small increments only if they were relevant for particular studies or geographic areas.

As the size of the study areas grew larger, however, so did the size of the database as the focus was placed on entire drainages or regions of California. As a result, I began to include and inventory any and all the radiocarbon dates that came to my attention to help determine if the list was both accurate and thorough. The database has become an integral and indispensable part of my research that focuses on Holocene landscape changes and the structure and visibility of the archaeological record. Now some 15 years later, **the database contains about 26,000 samples** from thousands of locations that stretch across California and other states west of the Rocky Mountains.

Recently, the geographic range of the database was expanded to include samples from the entire United States (except Hawaii), which has increased **the count to more than 32,545 radiocarbon samples overall** (about 3,500 more than listed for the United States in the Canadian Radiocarbon Database (CARD). Tens of thousands of additional U.S. dates have since been assembled and are poised for integration into the database, which will easily double the total count to 60,000 samples or more.

As an archive of spatial, temporal, cultural, and stratigraphic data, the database is a valuable resource and important research tool for a wide-range of environmental, geologic, archaeological, and paleoclimatic studies in the American West and United States as a whole. The long-term goal is to “publish” the database and safely archive it in an appropriate venue where it is maintained, and made readily available to all who are interested. *Contributions, ideas, suggestions, or offers are most welcome!*

Database Structure, Fields, and Content

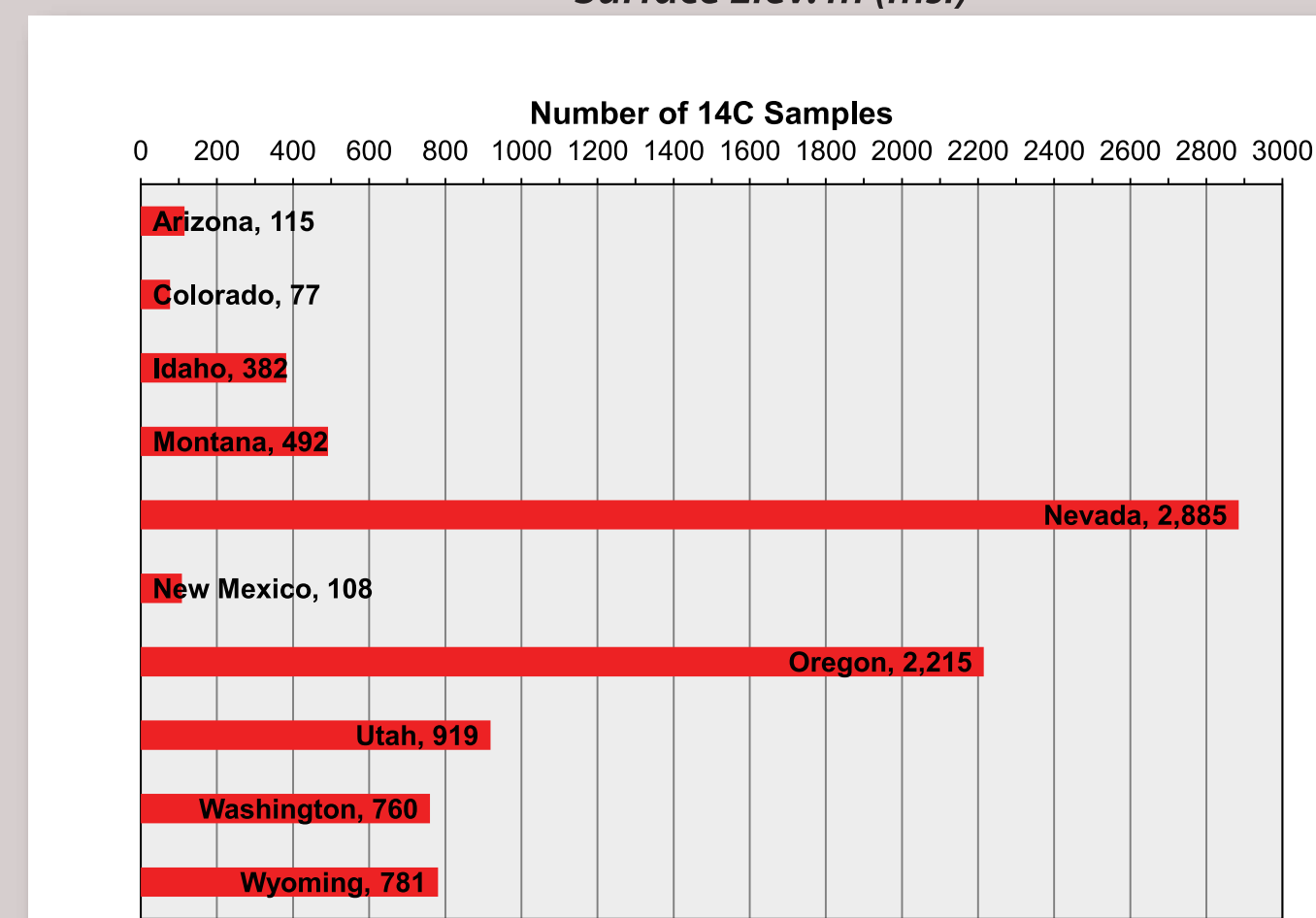
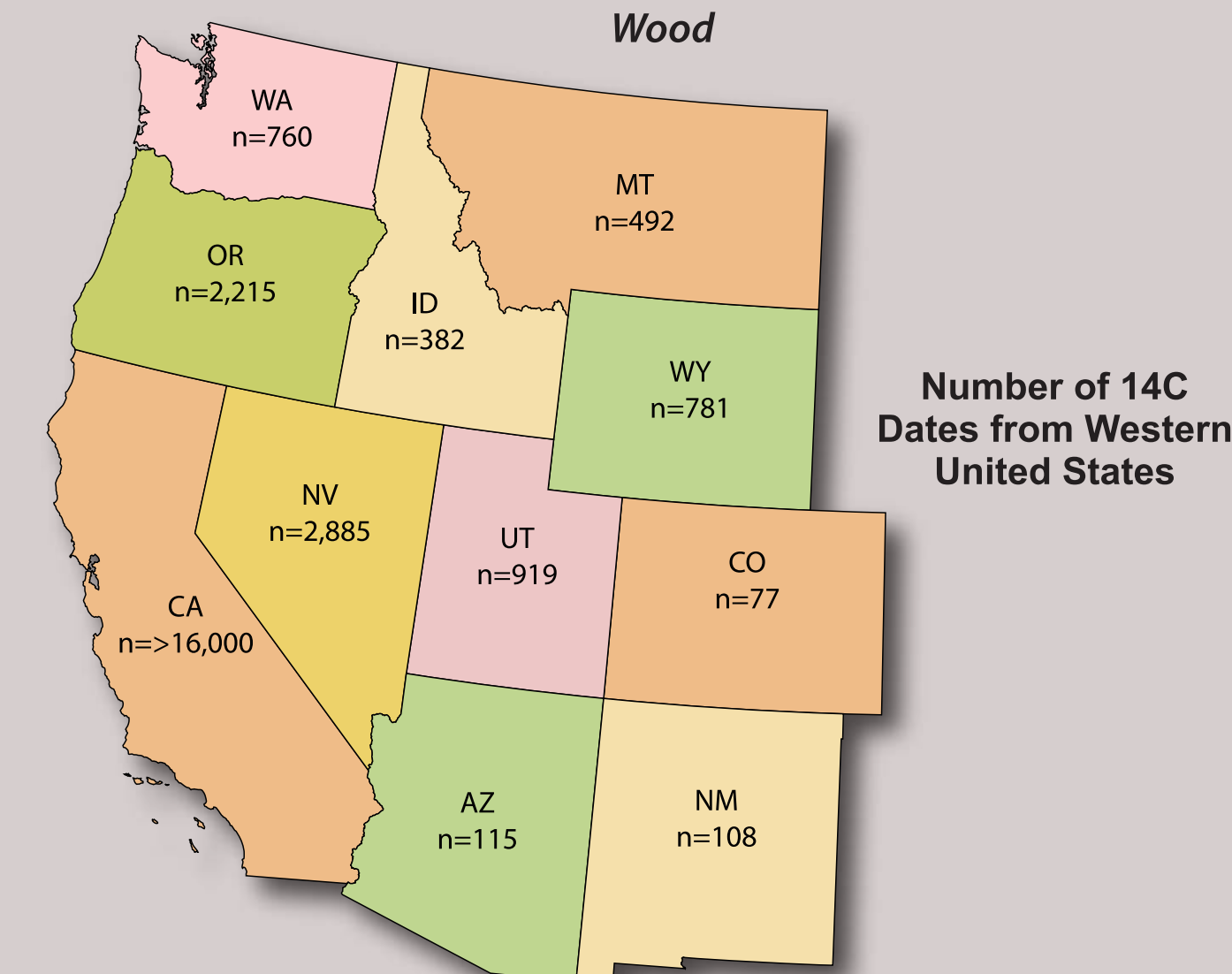
The database currently exists in two electronic formats: Microsoft Access and Excel. To improve the quality and analytical power of the database, as much contextual information as possible was added for each date, and the data normalized so it can be sorted, analyzed, and compared in a consistent fashion. As shown below, it is composed of more than 30 primary data fields, such as geographic region, landform, deposit, provenience, material, depth, C12/C13 ratio, reference, location, and elevation, were populated whenever possible. The data is then checked for accuracy and entered by hand or electronically copied or extracted directly from the original source document. Multiple cross checks are performed to avoid duplicate entries.

PRIMARY MATERIAL CLASSES:

Bone
Carbon
Carbonate
Charcoal
Hydrocarbon
Ivory, Tusk
Micro-fauna, marine
Micro-fauna, terrestrial
Organic sediment
Organics
Peat
Plant
Shell, marine
Shell, terrestrial
Soil (SOC)
Unknown
Wood

PRIMARY DATA FIELDS:

Sample Index No.
County
Site Number, Name, Area
Geographic Region
Landform Setting
Deposit Dated
Context
Provenience, Stratum, Horizon
Source Type
Material Class
Material Type
Min. Depth cm
Max. Depth cm
Avg. Depth cm
14C age BP
± 1-Sigma
d13C
Min. 2-Sigma Cal BP
Cal BP (median probability)
Max. 2-Sigma Cal BP
Lab or Sample No.
Source Reference
Latitude North
Longitude East
Surface Elev. m (msl)



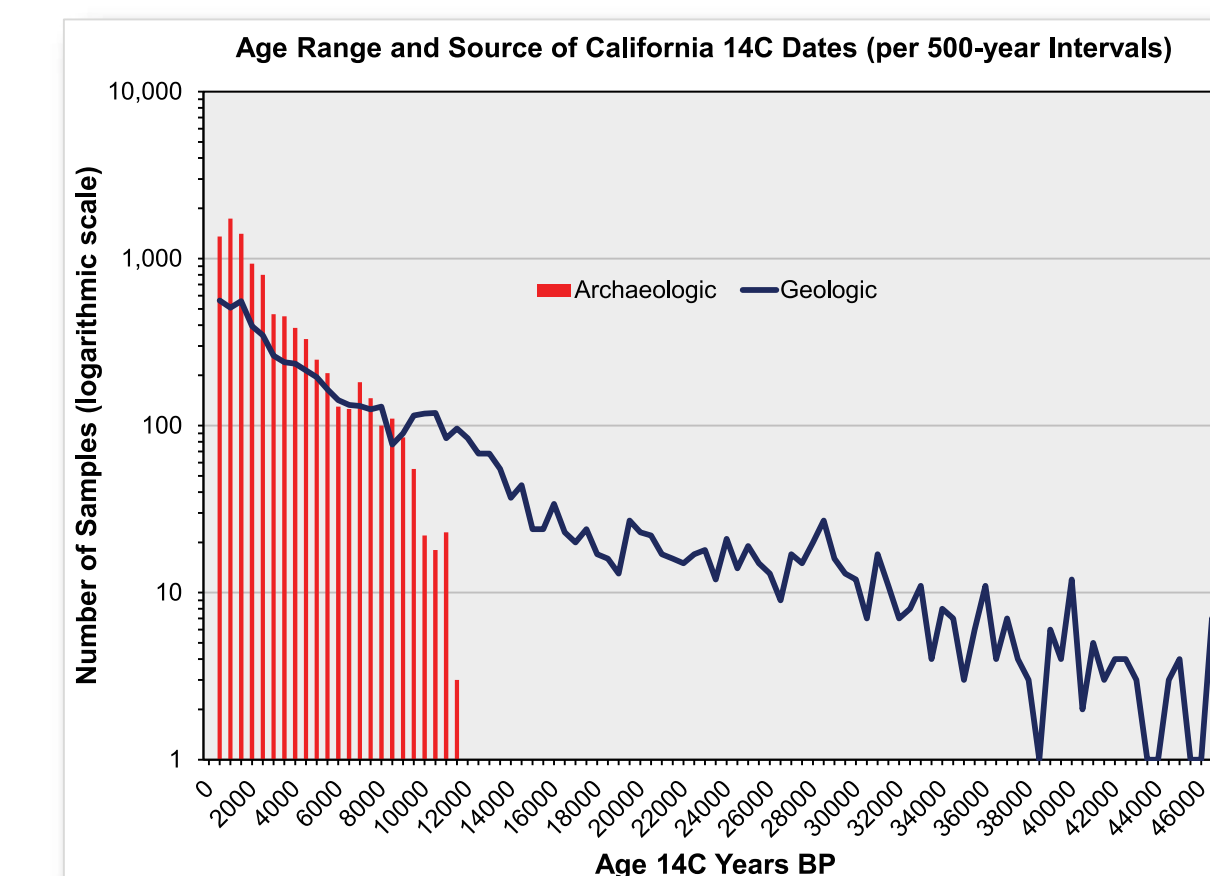
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
	Index No.	State, Country, Province, Territory	County	Site Name, Locality, or Name	Geographic Region	Landform, Deposit	Deposit Dated	Context	Location, Provenience, Stratum, Horizon, etc.	Type	Material Class	Material Type	Min. Depth (cm)	Max. Depth (cm)	Avg. Depth (cm)	14C age BP	± error	d13C (‰ ± 1σ)	Min. Cal BP	Cal BP (med. prob.)	Max. Cal BP	AD / BCE (med. prob.)	Lab Reference	Source Reference
1	1	CA	ALA	ALA, Arroyo de Laguna, Bernal Bridge	Coast Ranges, central	Floodplain	Barred deposit	2 Buried	Left (east) bank south of Bernal Rd bridge, Unit if, Sub. P&A 1 -	Natural	Soil (SOC)	Soil, SOC	740	770	755	7630	138		7613	7955	8656	-5895	Beta-13829	Groover, Elmer [et al. 1995]
2	1957	CA	ALA	ALA, Agua Fria Creek, BART Est.	Santa Clara Valley	Fan, Floodplain	Barred deposit	2 Buried	Cave 1, P&A 2 -	Natural	Soil (SOC)	SDM	400	410	405	11450	50	-25.50	1385	1336	13432	-11366	Beta-303616	BART Extension in expansion, P&A 2
3	1958	CA	ALA	ALA, Agua Fria Creek, BART Est.	Santa Clara Valley	Fan, Floodplain	Barred deposit	2 Buried	Cave 2, P&A 2 -	Natural	Soil (SOC)	SDM	640	658	645	17428	70	-23.80	20374	20755	21194	-18895	Beta-303617	BART Extension in expansion, P&A 2
4	1959	CA	ALA	ALA, Agua Fria Creek, BART Est.	Santa Clara Valley	Fan, Floodplain	Barred deposit	2 Buried	Cave 7, P&A 2 -	Natural	Soil (SOC)	SDM	840	858	845	18150	70	-24.00	21394	21671	22067	-19721	Beta-303618	BART Extension in expansion, P&A 2
5	1960	CA	ALA	ALA, Arroyo de Laguna, Bernal Bridge	Coast Ranges, central	Floodplain	Barred deposit	2 Buried	Left (east) bank south of Bernal Rd bridge, Unit if, Sub. P&A 1 -	Natural	Charcoal	Charcoal	500	500	500	3630	30	-25.50	4147	4229	4300	-2279	Beta-342709	Meyer, Jack Research BT in progress
6	1961	CA	ALA	ALA, Arroyo de Laguna, Bernal Bridge	Coast Ranges, central	Floodplain	Barred deposit	2 Buried	Left (east) bank south of Bernal Rd bridge, Unit if, Sub. P&A 1 -	Natural	Charcoal	Charcoal	600	600	600	3860	30	-26.40	4225	4290	4411	-2248	Beta-342639	Meyer, Jack Research BT in progress

The majority of samples (n=16,100, ~65%) in the database are from California, with those from other states accounting for a little more than one-third of the total, including about 2,900 dates from Nevada, 2,215 dates from Oregon, more than 900 dates from Utah, and more than several hundred each from Washington and Wyoming.

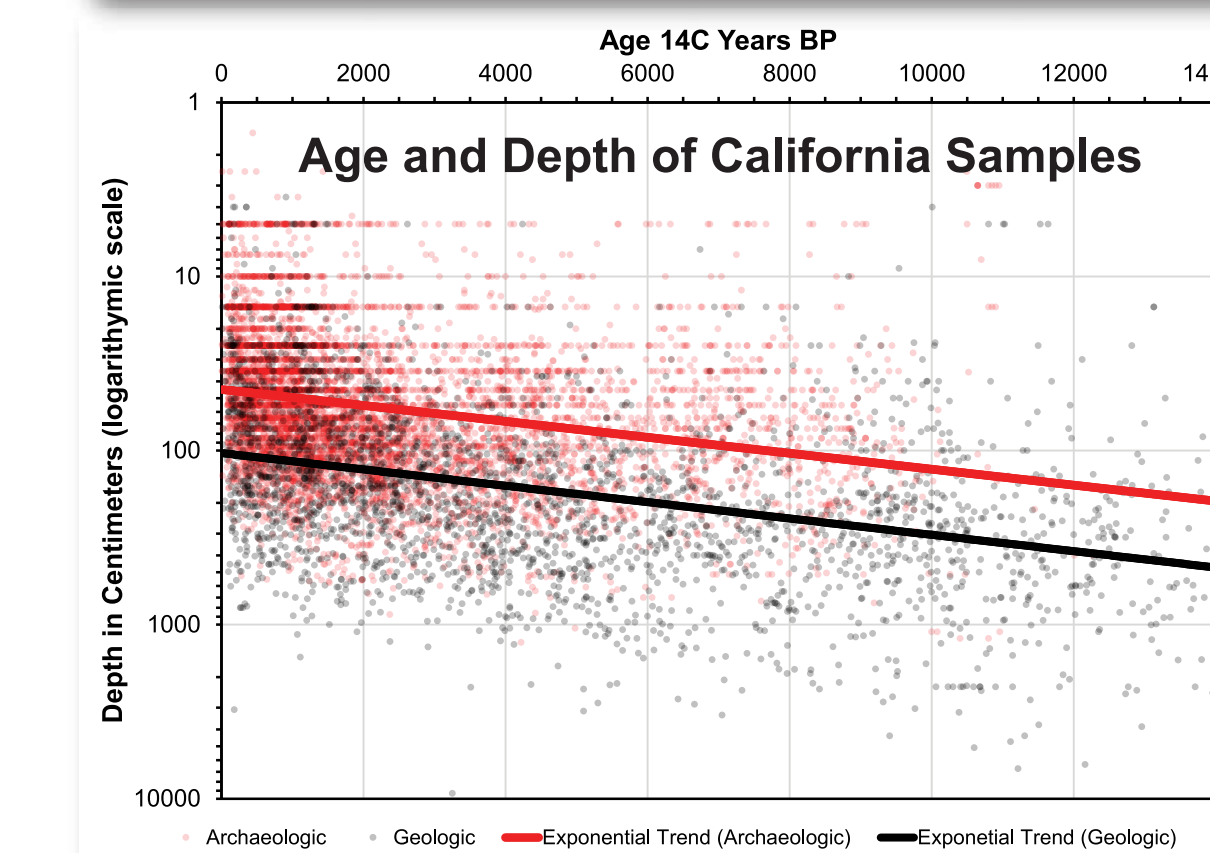
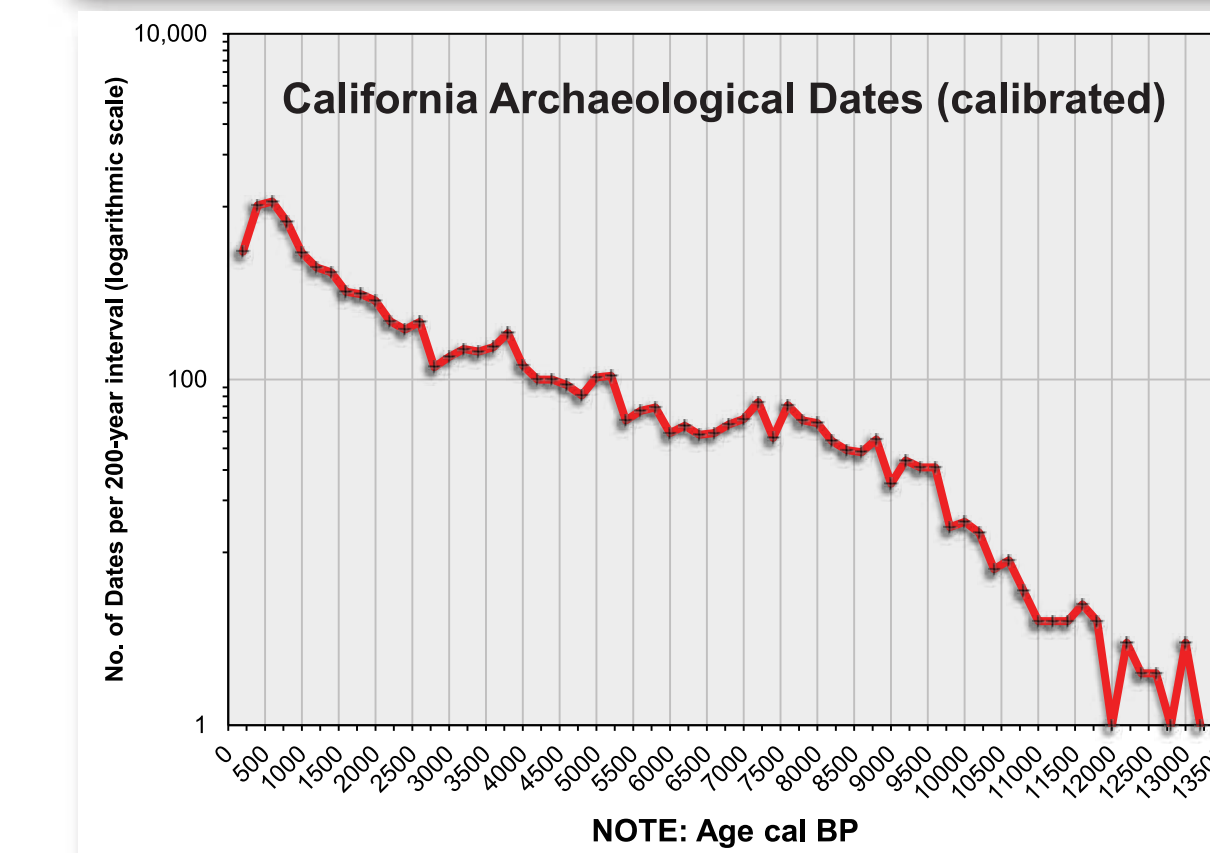
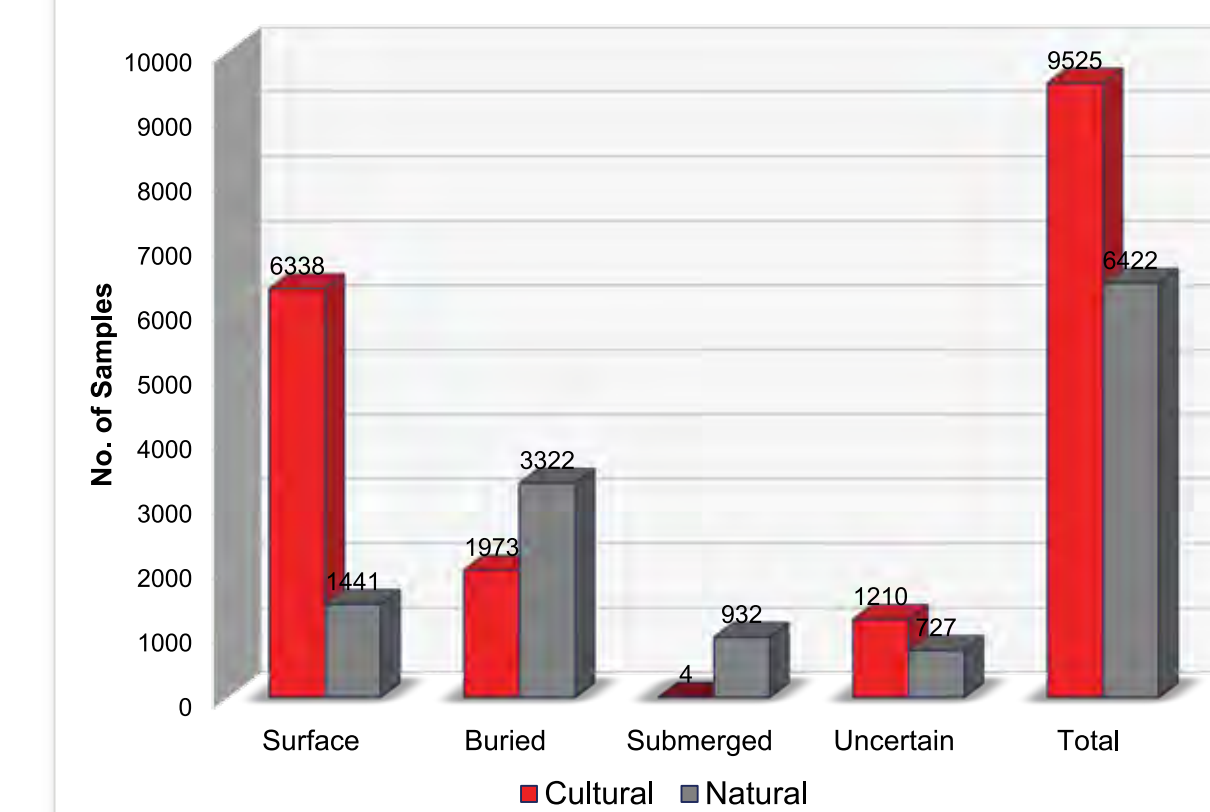
Summary of Dates and Datasets

The charts below give a general sense of the number, origin, context, material, and depth of the 14C samples in the California and Western States database. The charts on top row summarize the number and origin of the samples. In the second row, samples from different contexts compared for California (left), and the number of materials from all the Western States are shown at the right. Charts on the third row convey the age and number of dates from archaeological contexts, and those on the bottom row are the age and depth of the samples plotted in the form of “depth clouds.”

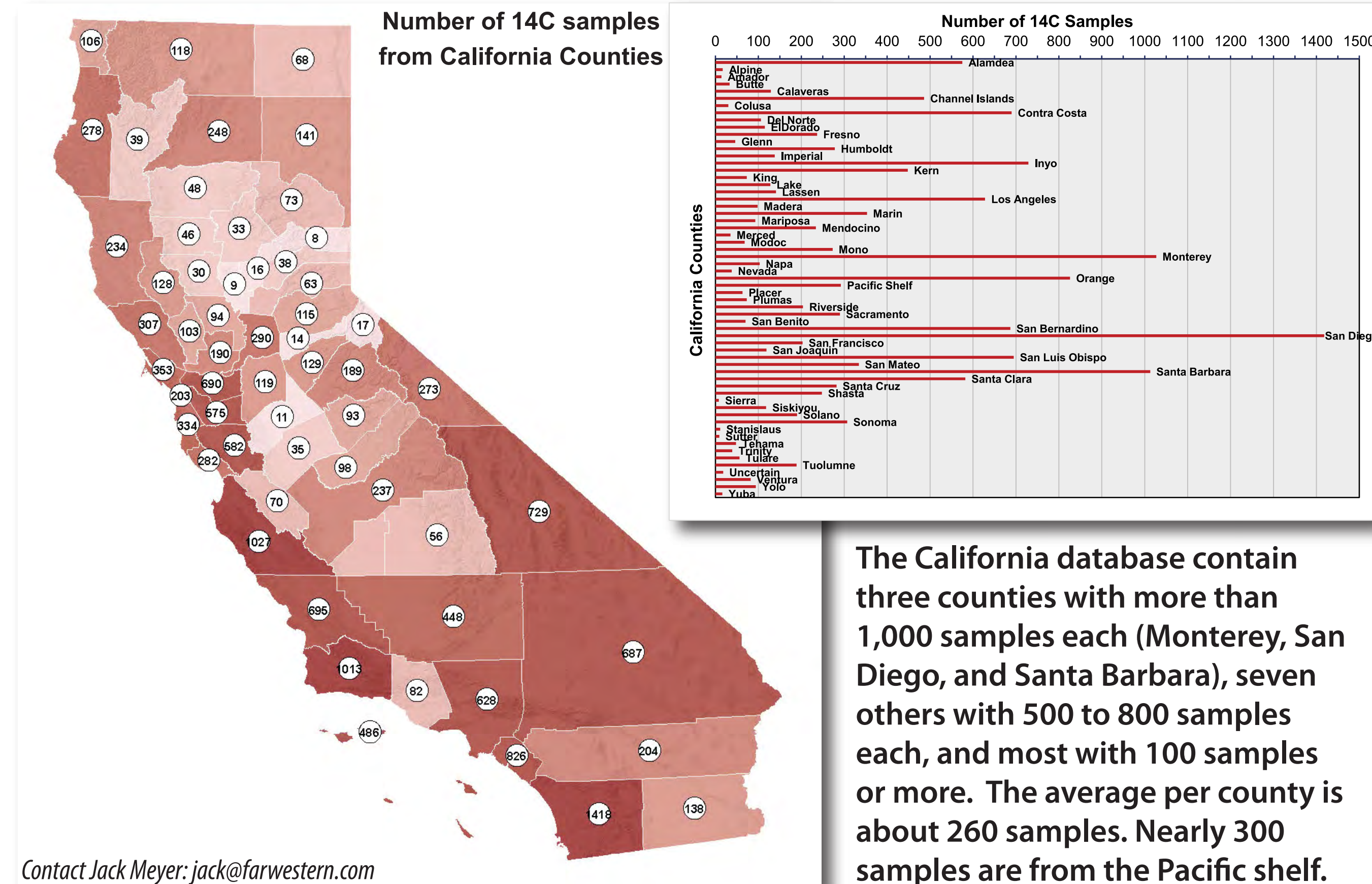
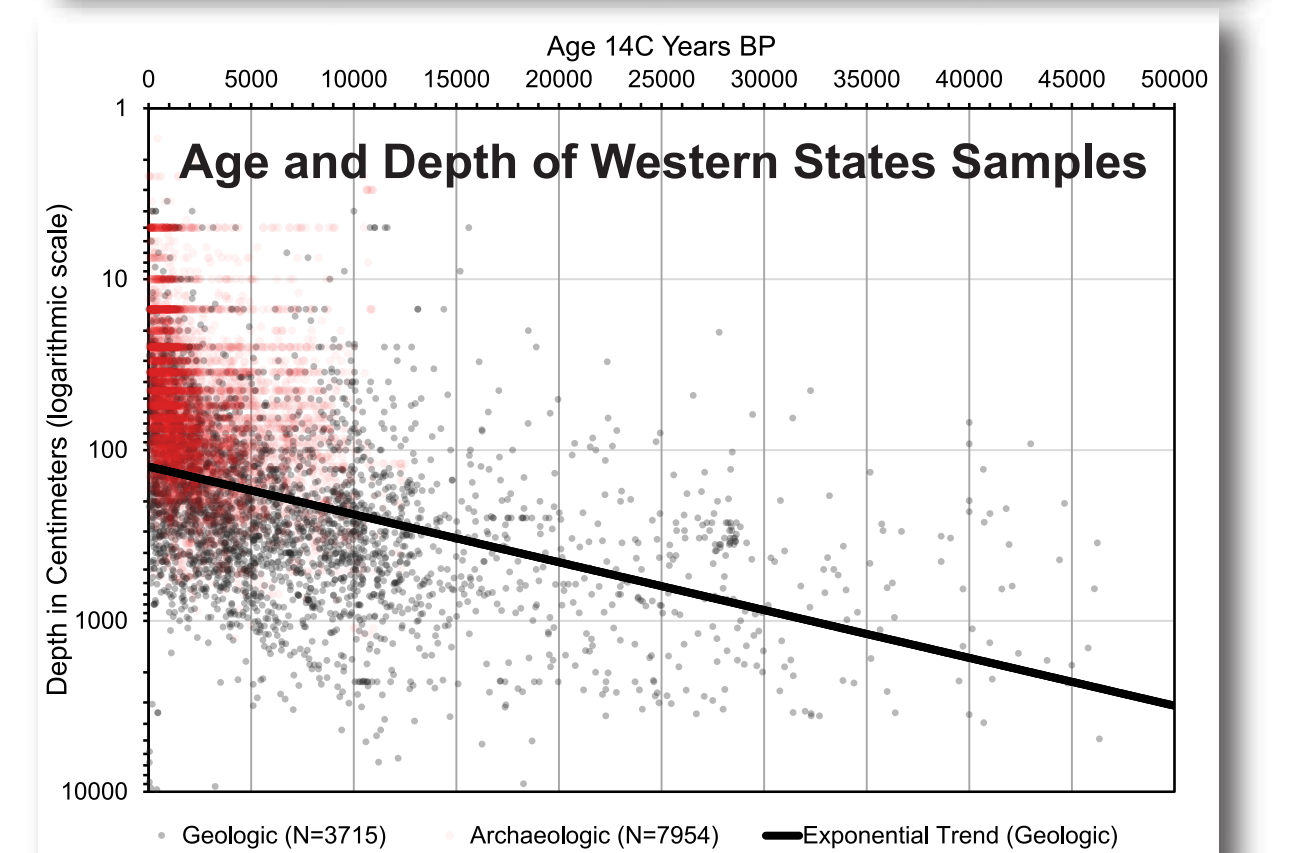
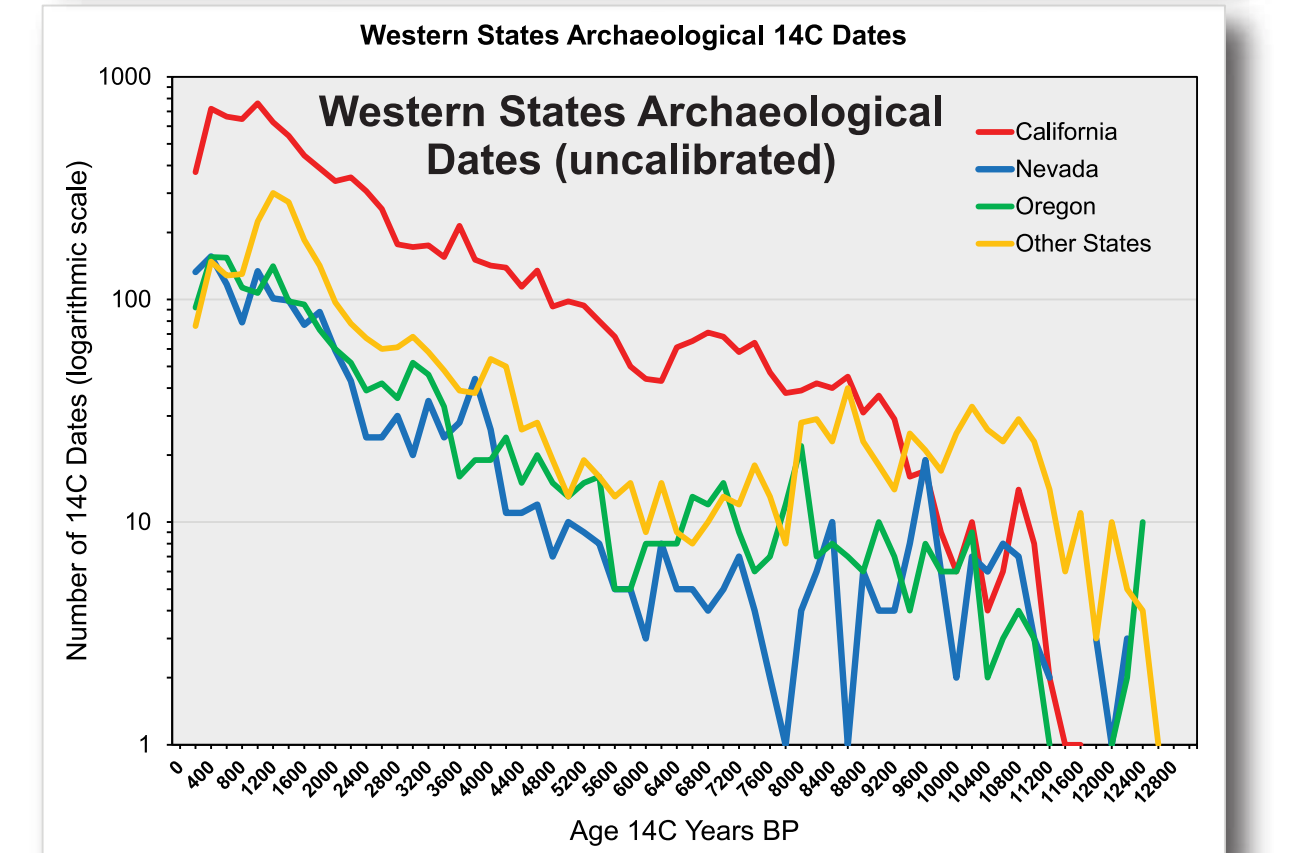
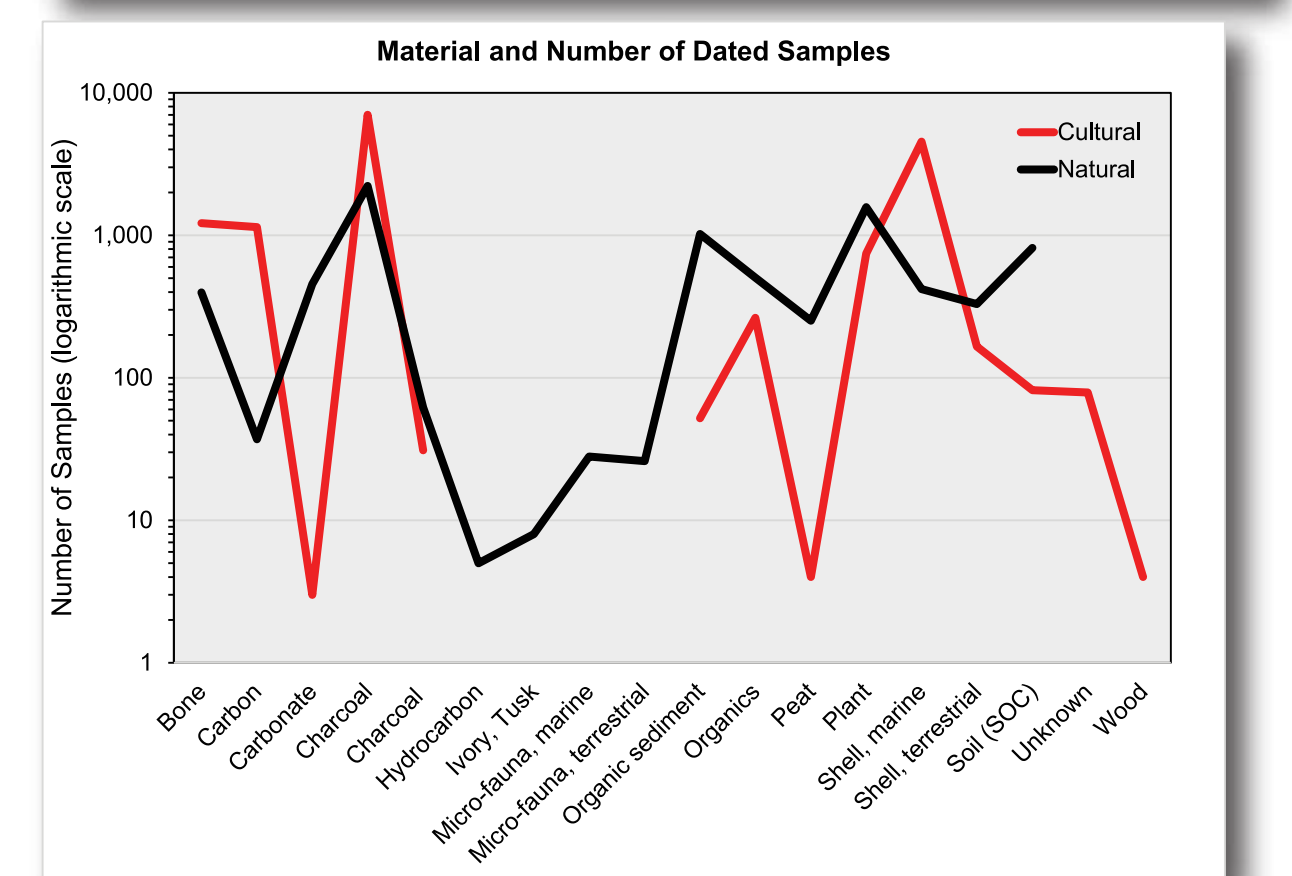
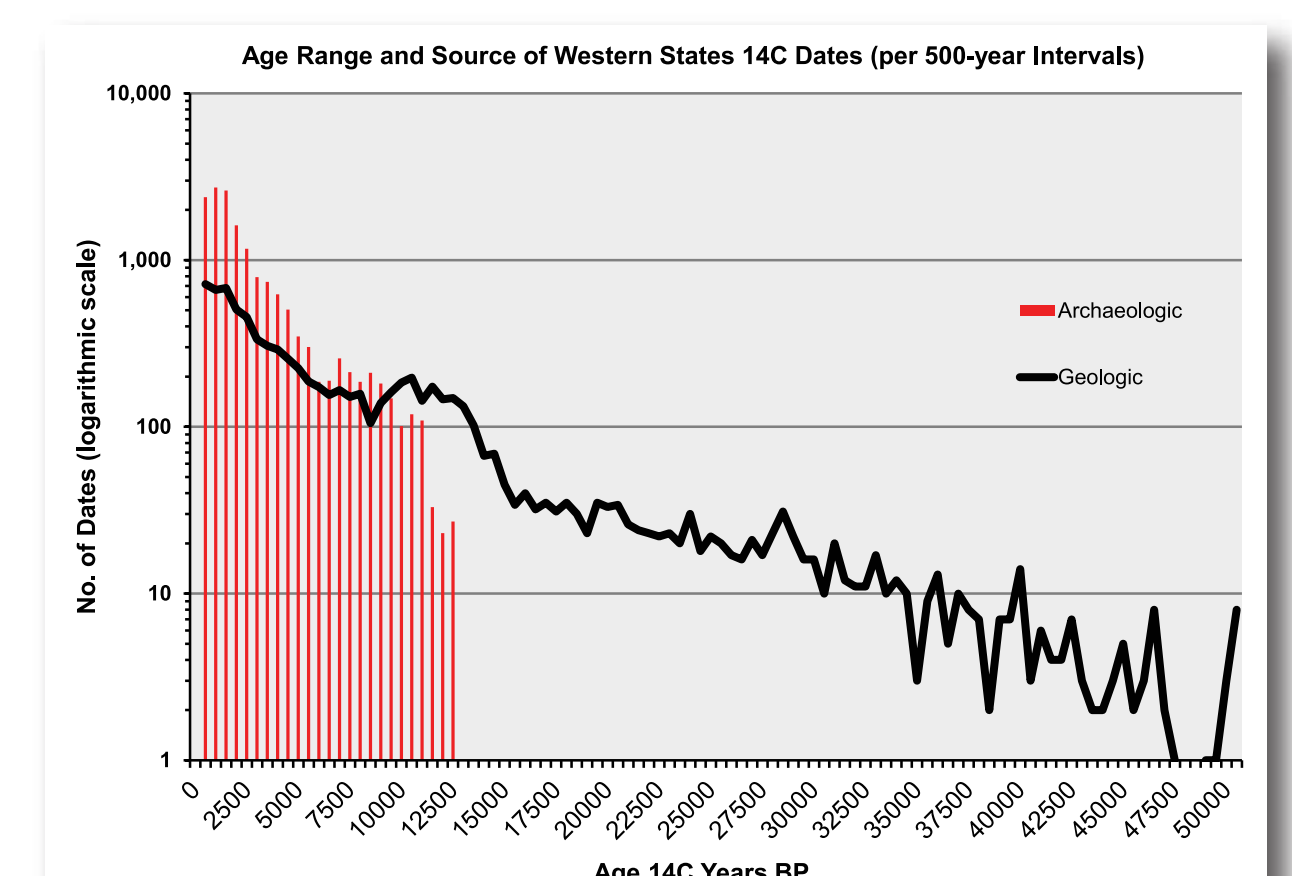
California Only



Context and Source of California Samples



All Western States



The California database contain three counties with more than 1,000 samples each (Monterey, San Diego, and Santa Barbara), seven others with 500 to 800 samples each, and most with 100 samples or more. The average per county is about 260 samples. Nearly 300 samples are from the Pacific shelf.

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